30884

S/171/61/014/004/001/003
E141/E465

(5 2120

AUTHORS:    Kostanyan, K.A., Kamalyan, S.A., Bezhanyan, S.A.

TITLE:      The density of sodium borosilicate glasses in the diffused state

TEXT:    No literature data is available as yet for calculating the density of fused glasses especially on measuring the density of sodium borosilicate glasses.  This physical property is most important for calculating the coefficient of surface tension, the viscosity, the electrical conductivity of glasses, etc.  In the present investigation, the authors measured the density of 22 sodium borosilicate glasses of the system $Na_2O-B_2O_3-SiO_2$  at temperatures between 800 to 1000°C.  A 15 mm diameter platinum sphere was suspended in the fused glass mass and measurements were carried out in an electric crucible furnace as well as in a silit furnace with four silit resistors.  The density was calculated according to the following formula:

$$d_t = \frac{M_1 - (M_2 - 0.0001\sigma)}{V_t}$$

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The density of sodium ...                E141/E465

where $d_t$ = the density of the fused glass mass $(g/cm^3)$;
$M_1$ is the weight of the sphere which is partly submerged in the
fused tailpiece, in air (in g); $M_2$ is the weight of the sphere
which is partly submerged in the fused tailpiece, in the fusion
liquid (in g); $\sigma$ = the surface tension (in dyne/cm); $V_t$ is the
volume of the sphere (in $cm^3$). Discrepancies between the
calculated and analysed values were only of an order of 2.5%.
In the temperature interval between 800 and 1000°C, a linear
relationship exists between the density of the tested glasses and
the temperature. Investigations were also carried out on the
relationship between the density and the composition of glasses
containing 40, 30, 20 and 10% $Na_2O$, at 1000°C. It was found that
the density at this temperature increased with decreasing ratio
$B_2O_3 : SiO_2$. Maxima were observed on the density isotherms when
the $Na_2O$ content was 10, 20 or 30%, the maximum being most marked
at a 10% $Na_2O$ content. The same type of changes in the density
were also apparent at 800°C. There are 6 figures, 1 table and
8 references: 3 Soviet-bloc and 5 non-Soviet-bloc. The four most
recent references to English language publications read as follows:
Ref.4: L.Chartsis, W.Capps, S.Spinner, J. Am. Ceram. Soc. v.36,
Card 2/3

The density of sodium ...

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S/171/61/014/004/001/003
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2, 35 (1953);
Ref.5: Pei-Ching Li, Anil C. Ghose, Gouq-Jen Su, Physics and
Chemistry of Glass, v.1, 6, 198 (1960);
Ref.6: L.Chartsis, W.Capps, S.Spinner, J. Am. Ceram. Soc. v.35,
6, 155 (1952);
Ref.8: J.Biscoe, B.E.Warren, J. Am. Ceram. Soc. v.21, 287 (1938).

ASSOCIATION: Institut khimii Sovnarkhoza ArmSSR
             (Institute of Chemistry Sovnarkhoz ArmSSR)

SUBMITTED:   June 30, 1961                    ·

Card 3/3

MANVELYAN, M.G.; KOSTANYAN, K.A.; YERZNKYAN, Ye.A.

Transition of the refractory material of the glass furnace into a vitreous mass during electric melting of glass. Izv. AN Arm. SSR. Ser. tekh. nauk 14 no.5:55-60 '61. (MIRA 15:1)
(Glass furnaces)

KOSTANYAN, K.A.; SAAKYAN, K.S.

Electroconductivity of glasses of the system $Na_2SiO_3 - SiO_2$ in the fused state. Izv. AN Arm.SSR. Khim.nauk 14 no.5: 409-416 '61.
(MIRA 15:1)

1. Institut khimii Sovnarkhoza Armyanskoy SSR.
(Glass--Electric properties)

MANVELYAN, Manvel Gareginovich; MELIK-AKHNAZARYAN, Ashot Fedorovich;
   KOSTANYAN, Kostan Artavazdovich; NALCHADZHYAN, Suren
   Oranesovich; YERZNKYAN, Yelena Amayakovna; ARUTYUNYAN, S.B.,
   red. izd-va; GALSTYAN, V., tekhn. red.

[Glass manufacture in electric furnaces]Elektrovarka stakla.
Erevan, Armianskoe gos.izd-vo, 1962.  221 p.   (MIRA 16:3)
    (Glass manufacture)   (Electric furnaces)

MANVELYAN, Manvel Gareginovich; MELIK-AKHNAZARYAN, Ashot Fedorovich;
     KOSTANYAN, Kostan Artavazdovich; NALCHADZHYAN, Suren Oganesovich;
     YERZNKYAN, Yelena Amayakovna; ARUTYUNYAN, S.B., red.izd-va;
     GALSTYAN, V., tekhn. red.

     [Electric glass founding]Elektrovarka stekla.  Erevan,
     Armianskoe gos. izd-vo, 1962.  221 p.      -      (MIRA 16:4)
          (Glass manufacture)

KOSTANYAN, K. A.; YERZINKYAN, Ye. A.

"Investigation of electroconductance of $K_2O-SiO_2$ system glasses over a wide temperature range."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

MANVELYAN, M.G.; KOSTANYAN, K.A.; MARGARYAN, A.A.

"Erevanit" as a material for glass melting. Behavior of "erevanit" on heating. Izv. AN Arm.SSR. Khim.nauki. 16 no.3:291-295 '63.
(MIRA 17:2)

1. Institut khimii Soveta narodnogo khozyaystva Armyanskoy SSR.

ACCESSION NR: AP4031752                                    S/0072/64/000/004/0005/0008

AUTHOR: Kostanyan, K. A. (Candidate of technical sciences); Geokchyan, O. K.
(Engineer)

TITLE: Electrical conductivity of molten sodium-calcium-magnesium alumosilicate
glass

SOURCE: Steklo i keramika, no. 4, 1964, 5-8

TOPIC TAGS: electrical conductivity, molten glass, glass, electrical property,
sodium containing glass, calcium containing glass, magnesium containing glass,
alumosilicate containing glass

ABSTRACT: This investigation was conducted to augment the already existing
electrical conductivity data on glasses at temperatures beyond 1150 C. The
measurements of electrical conductivity were conducted by the ac bridge method
and by the probe method. The data obtained by both methods are in excellent agree-
ment. The various glasses were made from pure and c.p. materials using washed
quartz sand as silicon dioxide. It was found that the formula

Card  1/2

Card  2/2

KOSTANYAN, K.A.

Electric conductance of fused alkali-borate and alkali-silicate glasses. Izv. An Arm.SSR Khim nauki 16 no.1:3-12 '63

(MIRA 17:8)

1. Institut khimii Soveta narodnogo khozyaystva Armyanskoy SSR.

KOSTANYAN, K.A.; AVETISYAN, E.M.;

Electric conductance of glasses of the system $Na_2O - B_2O_3 - SiO_2$ in the fused state. Izv. AN Arm SSR. Khim nauki
16 no.2:117-124 '63                                      (MIRA 17:8)

1. Institut khimii Soveta narodnogo khozyaystva Arm.SSR.

KOSTANYAN, K.A.; SAAKYAN, K.S.; GEOKCHYAN, O.K.

Density and electric conductance of sodium-calcium-magnesium
aluminosilicate glasses in a fused state. Izv. AN Arm.SSR.Khim.
nauki 17 no.4:357-367  '64.                          (MIRA 18:6)

1. Nauchno-issledovatel'skiy institut khimii Gosudarstvennogo
komiteta tsvetnykh i chernykh metallov pri Gosplane SSSR.

L 48607-55      EWP(e)/EWT(m)/EWP(t)/EWP(b)    Pq-4 . WH

AUTHOR: Kostanyan, K. A.; Yerznkyan, Ye. A.

TITLE:  Investigation of the electroconductivity of glasses in the $K_2O$-$SiO_2$ system in a wide temperature range

SOURCE: AN ArmSSR. Izvestiya. Khimicheskiy nauki, v. 17, no. 6, 1964, 613-622

TOPIC TAGS:  electric conductivity, glass, silicate glass

ABSTRACT:  The basic electroconductivity patterns were studied over a wide temperature range. Eight $K_2O$-$SiO_2$ system glasses were prepared with compositions ranging from 82% $SiO_2$ and 18% $K_2O$ to 60.5% $SiO_2$ and 39.5% $K_2O$. The electrical conductivity was measured in a temperature range from 100-1400°C. In the fused and highly viscous (500 degrees and higher) states the measurements were made by the ac bridge method using two types of cells:  1) a U-shaped quartz cell with flared edges and a high constant was used for high temperatures (900-1400 degrees) when the conductivity of the glass is great, and 2) a corundum "trough" with a low constant was used for low temperatures. The measurements were made in a platinum furnace. The change in the curve obtained from the results of the measurements reflected struc-

Card  1/2

L 49607-65
ACCESSION NR: AP5007848

tural transformations occurring in the glass upon transition from a solid state to a highly viscous one and then to a fused one. Orig. art. has: 5 figures, 6 tables, 7 equations.

ASSOCIATION: Yerevanskiy nauchno-issledovatel'skiy institut khimii (Yerevan Scientific Research Institute of Chemistry)

SUBMITTED: 15May64          ENCL: 00          SUB CODE: GC, MT

NO REF SOV: 010             OTHER: 006

Card 2/2

L 54728-65   EWP(e)/EWT(m)/EWP(t)/EWP(b)   Pq-4   WH
UR/0171/65/018/001/0003/0005
ACCESSION NR: AP5010260

AUTHOR: Kostanyan, K. A.; Yerznkyan, Ye. A.

TITLE: Electrical conductivity of molten fluoride glass

SOURCE: AN ArmSSR. Izvestiya. Khimicheskiye nauki, v. 18, no. 1, 1965, 3-5

TOPIC TAGS: glass, electric conductivity

ABSTRACT: The purpose of this work was to investigate the effect of fluorine on the electrical conductivity of molten glass. A comparison was made of two series of glass containing 14 and 17 weight % of $Na_2O$. In both series up to 7.5% fluorine was added at the expense of other oxides. To reduce the volatility of the fluorine, alumina and zinc oxide were added to the glass. The fluorine was added in the form of calcium fluoride. The electrical conductivity measurements were made by a previously described method [Izv. AN ArmSSR, KhN, 17, 613 (1964)]. Figure 1 of the Enclosure shows the results of the measurements of electrical conductivity in the two series of glass. The data indicates that in ordinary glass as well as in the glass containing fluorine the electrical conductivity is determined by the $Na_2O$ content. In the absence of heavy ions ($Ba^{++}$, $Pb^{++}$, etc.) the electrical conductivity

Card 1/2

L 54728-65
ACCESSION NR: AP5010260                                                          /

of fused glass may be described by the formula:

$$\log \chi = 1.508 - 0.0204C - \frac{4836 - 128C}{T}$$

where $C$ is the content of sodium oxide in weight % and $T$ is the absolute tempera-
ture. This formula gives satisfactory results in the 1100-1400°C interval when the
content of $Na_2O$ in the glass is between 12 and 20 weight %. Orig. art. has: 1
figure.

ASSOCIATION: Yerevanskiy nauchno-issledovatel'skiy institut khimii (Yerevan Scien-
tific Research Institute of Chemistry)

SUBMITTED: 20May64            ENCL: 01               SUB CODE: MT, EM

NO REF SOV: 006               OTHER: 000

Card 2/2

L 02249-67

ACC NR: AR6023337  (A, N)     SOURCE CODE: UR/0299/66/000/003/M031/M032

AUTHOR: Kostandyan, L. I.

TITLE: Experimental homoplastic transplantation of fetal bone

SOURCE: Ref zh. Biol, Part II, Abs. 3M193

REF SOURCE: Sb. Aktual'n vopr. kliniki i lecheniya ortopedo-trav-matol. bol'nykh. Kiev, Zdorov'ya, 1965, 274-278

TOPIC TAGS: rabbit, plastic surgery tissue transplant, bone

ABSTRACT: In 23 rabbits a diaphysis defect of the fibular bone 9 to 12 mm in length was replaced by stored homologous fetal bone from the periosteum. The transplant exceeded the dimensions of the defect by 1.0 to 2.0 mm. Histomorphological and X-ray examinations were conducted from 5 to 70 days following the operation. In 15 days a periosteal reaction was observed in the host's bone. In 30 days the newly formed bone covered and grew into the transplant which underwent gradual resorption. In 50 days the defect area was filled with newly formed spongy bone. By the 60th to 70th days the structural change process terminated with the formation of a clearly defined cortical layer and bone marrow canal. N. S. /Translation of abstract/.

SUB CODE: 06
Card 1/1                                              UDC: 577.99

Experimental study of transplantation of auto-homo-and embryogenic bone. Acta chir. plast. (Praha) 7 no.1:62-69 '65.

1. Kazan Scientific Research Institute of Traumatology and Orthopaedics (Director: U.Y.Bogdanovitsh), Department of Traumatology and Orthopaedics (Chief Surgeon: Prof. L.I. Shulutko) and Department of Radiology (Chief Radiologist: Prof. D.E. Goldshtejn) of the Central Postgraduate Medical School, Kazan, U.S.S.R.

KOSTANDYAN, L.I., mladshiy nauchnyy sotrudnik (Kazan', ul. Sverdlova, d.74, kv.2)

Experimental homotransplantation of fetal bone. Ortop., travm. i protez. 25 no.4:29-33 Ap '64            (MIRA 18:1)

1. Iz Kazanskogo instituta travmatologii i ortopedii (direktor - starshiy nauchnyy sotrudnik U.Ya. Bogdanovich), kafedry trav- matologii i ortopedii ( zav. - zasluzhennyy deyatel' nauki prof. L.I. Shulutko) i kafedry rentgenologii i radiologii (zav. - zasluzhennyy deyatel' nauki prof. D.Ye. Gol'dshteyn) Gosudar- stvennogo instituta dlya usovershenstvovaniya vrachey imeni S.M. Kirova.

MALAYAN, S.V.; TUMANYAN, L.A.; KOSTANYAN, R.B.

Study of the effect of laser rays on the tunica oculi. Zhur.
eksp. i klin. med. 5 no.1:33-37 '65.                (MIRA 18:10)

KNIPPER, A.L.; KOSTANYAN, Yu.L.

Age of ultrabasites of the northeastern coast of Lake Sevan.
Izv. AN SSSR. Ser. geol. 29 no.10:67-79  O '64.

(MIRA 17:11)

1. Geologicheskiy institut AN SSSR, Moskva.

KOSTANYANTS, BORIS ALEKSANDROVICH

GRIGOR'YEV, Vsevolod Ivanovich; KOSTANYANTS, Boris Aleksandrovich;
    RATNIEKS, August Indrikovich; BUSALAEVA, N.G., redaktor;
KHELEMSKAYA, L.M., tekhnicheskiy redaktor

[Apparatus for subscribers to the telegraph system; information
manual] Apparatura abonentskogo telegrafa; informatsionnyi sbornik.
Moskva, Gos. izd-vo lit-ry po voprosam svyazi i radio, 1954. 110 p.
Supplement: [Album of the principal circuits] Al'bom printsipial'-
nykh skhem. 1 v. (unpaged, diagrs.)

1. Russia (1923-    U.S.S.R.) Ministerstvo svyazi. Tekhnicheskoye
upravleniye.
        (Telegraph—Apparatus and supplies)

KOSTANYANTS,B.A., inzhener

New telephone apparatus.  Vest.sviazi 15 no.9:9-10 S '55.  (MLRA 8:12)

1. Glavnyy konstruktor zavoda VEF
                    (Telephone--Apparatus and supplies)

KOSTARCHUK, V. N.

Dissertation: "An Investigation of Several Iterative Processes." Cand Phys-Math Sci, Zhitomir State Pedagogical Inst, Zhitomir-Krivoy Rog, 1953. (Referativnyy Zhurnal—Matematika, Moscow, Aug 54)

SO: SUM 393, 28 Feb 1955

*KOSTARCHUK, V.N.*

USSR/ Mathematics - Linear Equations

Card 1/1      : Pub. 22 - 5/49

Authors     : Kostarchuk, V. N.

Title       : About a method of solution of a system of linear equations and about
              the finding of eigen vectors of a matrix

Periodical  : Dok. AN SSSR 98/4, 531-534, Oct. 1, 1954

Abstract    : The iteration method for the solution of systems of linear algebraic
              equations with positively-defined matrices is described. The method
              also permits eigen vector, corresponding to the maximum eigen numbers
              of the matrices, to be found. One reference (1948).

Institution : ...

Presented by : Academician M. A. Lavren'tiev, June 25,1954

KOSTARCHUK, V.N.

/6.4600

AUTHOR:         Kostarchuk, V. N.

TITLE:          The method of normal secants for the solution of linear operator equations

PERIODICAL:     Referativnyy zhurnal, Matematika, no. 11, 1961, 78, abstract 11B410. (Tr. Seminara po funkts. analizu. Rostovsk.-d/D. un-t, Voronezhsk. un-t. 1960, vyp. 3-4, 54-76)

TEXT:     The method of normal secants formerly proposed by the author (RZh Mat, 1955, 4709) is used in order to solve the equation $Ax = a$ in the Hilbert space as well as to determine the least upper bound M of the spectrum of the positive operator A. The process is constructed for arbitrary $x_o$ according to the formulas

$$x_{n+1} = x_n - 2c_n \Delta_n, \quad \Delta_{n+1} = \Delta_n - 2c_n A\Delta_n, \quad c_n = (\Delta_n, \Delta_n)(A\Delta_n, \Delta_n)^{-1}$$

where $\Delta_n = Ax_n - a$. If A is compact and $a \in D(A^{-2})$, then generally holds $\Delta_n \to \Delta$, where $A\Delta = M\Delta$, $c_n \to M^{-1}$ and $(x_{n+1} + x_n) \to 2A^{-1}a$

If A is positive definite and obtained from a compact operator by a
Card 1/2

The method of normal secants for the ...

translation, then the above statement holds too. Besides an asymptotic estimation of the convergence speed is given. Further on for a positive definite bounded operator it holds $(x_{n+1} + x_n) \to 2A^{-1}a$. Some generalisations of the process of normal secants are considered and their convergence is proved. There are notes on the application of this method on the solution of integral and differential equations.

[Abstracter's note: Complete translation.]

Card 2/2

KOSTARCHUK, Viktor Nikolayevich[Kostarchuk, V.M.]; KHATSET, Boris
Isaakovich; KOPERSAK, G.D.[Kopersak, H.D.], red.; VOLKOVA,
N.K., tekhn. red.

[What is possible and what is not possible in geometry using
compass and ruler]Pro mozhlyve i nemozhlyve v geometrii
tsyrkulia i liniiky.  Kyiv, Radians'ka shkola, 1962.  124 p.
(MIRA 16:1)

(Geometry)

KOSTAREV, A.A.

Use of the phase shift method in the inverse scattering problem.
Izv. vys. ucheb. zav.; fiz. no.4:109-112 '64      (MIRA 17:8)

1. Odesskiy inzhenerno-stroitel'nyy institut.

KOSTAREV, A.A.

Theory of perturbations in the inverse scattering problem.
Izv. vys. ucheb. zav.; fiz. 8 no.1:125-128 '65.    (MIRA 18:3)

1. Odesskiy inzhenerno-stroitel'nyy institut.

**Theory of the absorption of x-rays by metals.** A. I. Kostarev. *J. Expl. Theoret. Phys.* (U. S. S. R.) 9, 377-79 (1939).—The coeffs. of absorption, and the course of the general absorption and the fine-structure curves by Sommerfeld and Brillouin electrons in the A-shells of metals are calcd. Neither of these methods, nor a modified Kronig fine-structure method gives satisfactory results. K. believes that the fine structure is conditioned by a distortion of the wave function of the removed electron by the neighboring atoms of the metal lattice.

F. H. Rathmann

C A

3

PROCESSES AND PROPERTIES INDEX

**Theory of the fine structure of the x-ray absorption bands of a solid body.** A. I. Kostarev. *J. Expl. Theoret. Phys.* (U. S. S. R.) 11, 60–73(1941).—Assuming that the fine structure of the x-ray absorption of solid bodies is due to scattering of the waves of the x-ray electrons of the absorbing atom by the surrounding atoms, and applying the method used by Peterson in his molecular x-ray absorption, K. calcs. the fine-structure of polycryst. Cu. The calcd. values are in better agreement with the exptl. data of Rupp (*C. A.* 23, 3402) than are the values calcd. by Kronig and by Bethe (*C. A.* 25, 4783; 26, 4247).

P. H. Rathmann

ASM-SLA   METALLURGICAL LITERATURE CLASSIFICATION

KOSTAREV, A. I.

Chair of Physics, City of Gorkiy Teachers' Training Inst., (-1946-)

"On Computation of Fine Structures of X-Ray Absorption Spectra
of Polyatomic Gases $GeCL_4$ and $AsCL_3$,"

Zhur. Fiz. Khim., No. 1, 1946.

**Possibility of existence of an anisotropy of fine structure in x-ray absorption spectra in crystals.** A. I. Kostarev (Pedagog. Inst., Gor'kiĭ). *J. Exptl. Theoret. Phys.* (U.S.S.R.) **16**, 739–43(1946).—R. L. Kronig's theory of fine structure of the short-wave end of absorption bands of x-rays (C.A. **25**, 4783; **26**, 4247), observed in polycrystals, is tentatively extended to single crystals and shown to lead of necessity to the existence of an anisotropy effect which is incompatible with exptl. findings. From the point of view of the author's alternative theory, linking fine structure in absorption to an effect of the closest neighbors of the absorbing atom, and resulting in spherical symmetry, anisotropy in single crystals is impossible.

Kronig's theory is considered to be limited to the long-wave side of x-ray absorption bands in crystals.

N. Thon

A.S.M.—S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

*3*

**Explanation of the fine structure of x-ray absorption spectra of solids.** A. I. Kostarev (Superior Inst. Navigation, Odessa). *Zhur. Eksptl. Teoret. Fiz.* **19**, 413 (1949); *Chem. Zentr.* 1900, I, 830.—The fine structure of the lines of the x-ray absorption spectra of solids are characterized not by the location of their max. and min. alone but also by their form and relative intensity. The results of x-ray absorption measurements are explained in terms of the theory of the fine structure of x-ray absorption. The superfine structures for Cu and α-Fe are calcd. The influence of the type of crystal lattice on the character of the fine structure is described.          M. G. Moore

KOSTAREV, A. I.

168T99

USSR/Physics - X-Ray Spectrum, Absorption    Sep 50
Fine Structure, X-Rays

"The Theory of Temperature Dependence in the Fine
Structure of X-Ray Absorption Spectra of Solids,"
A. I. Kostarev, Odessa State U.

"Zhur Eksper i Teoret Fiz" Vol XX, No 9, pp 811-823

Considers influence of thermal oscillations in sur-
rounding atoms on elementary act of K X-ray absorption
in a solid. Hence, develops subject theory. Precalcu-
lates temperature boundaries of disappearance of fine
and superfine structures, particularly for crystallic
copper. Theoretical conclusions agree well with
facts. Submitted 11 Mar 50.

168T99

KOSTAREV, A.I.

9

√The temperature limits for the disappearance of the fine and hyperfine structure of the x-ray absorption spectra of various elements  A. I. Kostarev (State Univ....
Zhur. Eksptl. i Teoret. Fiz. 26, 205(1954)

25026. —The theory of the temp. depx[...] of the fine structure of the x-ray absorption spectra has been carried out; the theoretical evaluation of the temp. limits for several elements: Ca, Ni, Zn, Hg, Pt, and Pb. The appearance and disappearance of this effect is studied. The theory, which is only semiquant. leads to good agreement with exptl. results.                                        I. Roctar Leach.]

KOSTAREV, A.I.

USSR/Physics - Spectrography, Crystals          May 52

"Theory of Absorption and Emission X-ray Spectra of Ionic Crystals," A. I. Kostarev, Odessa State U

"Zhur Eksper i Teoret Fiz" Vol XXII, No 5, pp 628-635

Comparison of fine structure of K-bands of X-ray absorption of ionic crystal (e.g., KCl) with the system of its optical levels reveals a rather coincidence. Same comparison with K-series of X-ray emission spectrum allows one to interpret the short-wave satellites of this spectrum. Received 12 Sep 51.

215T97

1. KOSTAREV, A. I.

2. USSR (600)

4. Absorption Spectra

7. Comment on the articles of A. I. Kostarev. Zhur. eksp. i teor. fiz. 23 no.5. 1952.

9. Monthly List of Russian Accessions, Library of Congress, April _____ 1953, Uncl.

KOSTRREV,A.I.

(Andrey Ivanovich)

"Investigation of the Theory of X-ray Absorption Spectra," (Dissertation), Academic degree of Doctor in Physicomathematical Sciences, based on his defense, 24 December 1953, in the Council of the Kiev State U im. Shevchenko, and Academic title of Professor, Chair, Gneral Physics.

M- 3,054,778, 2 Oct 57

Odessa Electrical Engineering Inst. of Communications.

KOSTAREV, A.I. (g. Novorossiysk)

The Maikop combine uses antiquated technology. Der. i lesokh m. prom.
3 no.12:26 D '54.                                        (MLRA 8:1)
        (Maikop--Furniture industry)

USSR/Physics - X-ray spectra                                           FD-1373

Card 1/1      :  Pub. 146-18/18

Author        :  Kostarev, A. I., and Borovskiy, I. B.

Title         :  Discussion. Theory of Roentgen absorption spectra

Periodical    :  Zhur. eksp. i teor. fiz., 26, 377-384, May 1954

Abstract      :  The authors discuss the theory of the fine structure of Roentgen
                 absorption spectra of various substances. They give a survey of the
                 literature on this theory, especially of the works of E. Ye. Vaynsh-
                 teyn, R. L. Barinskiy, and K. I. Narbutt, writing in Doklady Akademii
                 Nauk SSSR for 1951-1952. In particular the two authors consider the
                 applicability of the Rydberg series formula, the relation between theo-
                 ries of the main edge and the peak of the Roentgen absorption band, and
                 finally the Roentgen spectra of ionic crystals. Thirty-two references,
                 19 USSR.

Institution   :  Odessa State University and Institute of Metallurgy, Acad. Sci. USSR

Submitted     :  August 19, 1953

KOSTAREV, A.I.

Theory of the anisotropy of X-ray K-absorption spectra in single crystals. Fiz. met. i metalloved. 19 no.6:801-808 Je '65.    (MIRA 18:7)

1. Odesskiy elektrotekhnicheskiy institut svyazi.

L 4180-66    EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c)    IJP(c)    JD/GG
ACCESSION NR: AP5016521
                                       UR/0126/65/019/006/0801/0808
                                       548.7.01                        30
                                                                        27
AUTHOR: Kostarev, A. I.                                                 B

TITLE: Theory of anisotropy of x-ray absorption K-spectra of single crystals

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 6, 1965, 801-808

TOPIC TAGS: x ray absorption spectrum, single crystal, spectral fine structure

ABSTRACT: A theory is presented which explains the relationship between the fine
structure of x-ray K-spectra absorption of single crystals and the orientation and
polarization of the x-ray being absorbed. Two cases were compared: (1) when the
absorbed (unpolarized) x-ray is parallel to the c-axis of the single crystal, and
(2) when the ray is directed at some angle to this axis. After discussing the re-
lative ceofficient of x-ray K-absorption, the perturbation of the wave of the x-
ray electron by the atomic surroundings of the absorbing atom, and the influence
of the scattering of the x-ray electron on the matrix element of its $K \rightarrow F$ ab-
sorption transition, the author calculates the relative coefficient of x-ray K-ab-
sorption of a single crystal, allowing for the polarization of the radiation.

Card 1/2

L 4130-66
ACCESSION NR: AP5016521

3

From the expression for this coefficient, he draws several conclusions regarding the anisotropy of the fine structure of x-ray absorption. Orig. art. has: 2 figures, 40 formulas.

ASSOCIATION: Odesskiy elektrotekhnicheskiy institut svyazi (Odessa Electrical Engineering and Communications Institute)

SUBMITTED: 07Jul64                ENCL: 00                    SUB CODE: OP, SS

NO REF SOV: 005                   OTHER: 007

Card 2/2

L. 12872-66   EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c)   IJP(c)   JD/JG/LHB

ACC NR: AP5018854              SOURCE CODE:   UR/0126/65/020/001/0026/0032

AUTHOR:  Kostarev, A. I.

ORG:  Odessa Electrotechnical Institute of Communications (Odesskiy elektrotekhnicheskiy institut svyazi)

TITLE:  Anisotropy of the fine structure of x ray K absorption spectrum of a gallium single crystal

SOURCE:  Fizika metallov i metallovedeniye, v. 20, no. 1, 1965, 26-32

TOPIC TAGS:  gallium, crystal anisotropy, spectral fine structure, x ray absorption spectrum, single crystal

ABSTRACT:   A theory on the anisotropy of x-ray absorption of single crystals (previously formulated by the author) is applied to experimental data of W. M. Weber (*Physica*, 1962, 28, 689; 1964, 30, 2219) on this phenomenon in gallium single crystals.  Fig. 1 shows x-ray absorption of the K band in Ga single crystals.  X-ray patterns for the fine structure of K band absorption for Ga single crystals show a variation in the extrema in two crystallographic orientations.  In the case of k' beam polarization, the intensity of the fine structure is minimal where

UDC:  548.7.01

Card 1/2

L   12872-66

ACC NR:   AP5018854

a      GALLIUM
       K edge

I          PbLα,

II         PbLα,

400    300    200   100    0 ev
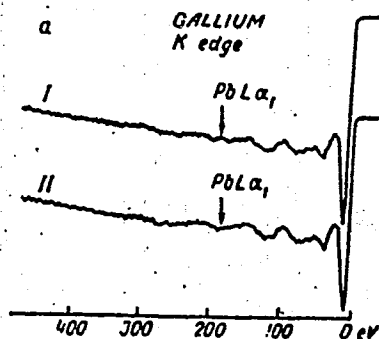
Fig. 1.  I--k' beam with the axis of the
crystal at angles $\theta_0 = 52°$ and $\phi_0 = 82°$;
II--K beams parallel to the axis $C_0$ (z axis)

the plane of oscillation of this beam coincides with the plane of
$(C_0 'k')$.  The theory was found to be in satisfactory agreement with
Weber's experimental findings.  Orig. art. has:  3 figures, 4 tables,
19 formulas.

SUB CODE: 20/   SUBM DATE: 07Jul64/   ORIG REF: 001/   OTH REF: 003

Card 2/2 H W

SHIROKOV, A.P., kand.tekhn.nauk; KOSTAREV, A.P., inzh.; KOTYAKHOV, V.I.,
        inzh.

        Use of coal saws in Kuznetsk Basin mines.  Bezop.truda v prom.
        7  no.3:71-72  Mr  '63.                              (MIRA 16:3)

        1. Kuznetskiy nauchno-issledovatel'skiy ugol'nyy institut (for
        Shirokov).  2. Kombinat ugol'nykh predpriyatiy Kuznetskogo
        kamennougol'nogo basseyna (for Kostarev).  3. Shakhta im.
        Vakhrusheva, Kuzbass (for Kotyakhov).
                          (Kuznetsk Basin--Coal mining machinery)

KOSTAREV, A.P.

Incidence of pyoderma and minor skin injuries in workers of
machine-tractor stations and state farms located in recla-
mation zones of virgin and idle lands. Vest.ven. i derm. no.3:
22-23 My-Je '55.                                    (MLRA 8:10)

1. Iz Troitskogo gorodskogo vendispansera Chelyabinskoy oblasti
(glavnyy vrach A.P.Kostarev)
        (PYODERMA, epidemiology
            in Russia, on motor tractor stations & state farms)
        (SKIN, wounds and injuries
            incidence on motor tractor stations & state farms
            in Russia)
        (AGRICULTURE
            pyoderma & skin inj.incidence in Russia)
        (OCCUPATIONAL DISEASES
            pyoderma & skin inj. in workers of motor tractor
            stations & state farms in Russia)
        WOUNDS AND INJURIES
            skin i n workers of motor tractor stations & state
            farms in Russia)

KOSTAREV, A. P.

ZAYTSEV, B.M.; ADAMOVICH, Ye.A.; CHUMADUROV, A.T.; KOSTAREV, A.P.; IPATOV, M.I.

Preventing scum formation in evaporators. Gidroliz. i lesokhim. prom.
8 no.4:13-14 '55.                                                (MIRA 8:9)

1. Vsesoyuznyy Nauchno-issledovatel'skiy institut gidroliznoy i
sul'fitno-spirtovoy promyshlennosti.    (Evaporating appliances)

KOSTAREV, A.P.

Virile hypertrichosis. Vest.ven. i derm. 30 no.5:54 S-O '56.
        (HYPERTRICHOSIS)                    (MIRA 9:12)

KOSTAREV, A.P.

Organization of the struggle against purulent skin diseases in agriculture. Vest.derm. i ven. 32 no.1:34-37 Ja-F '58. (MIRA 11:4)

1. Iz Troitskogo kozhno-venerologicheskogo dispansera Chelyabinskoy oblasti (glavnyy vrach A.P.Kostarev)
        (OCCUPATIONAL DISEASES, prev. & control
            purulent skin dis. in agriculture, organiz. of prev. (Rus)
        (SKIN DISEASES, prev. & control, same)

USSR / Farm Animals.   The Honeyboe.                              Q

Abs Jour   : Rof Zhur - Biologiya, No 2, 1959, No. 7404

Author     : Kostarev, G.
Inst       : Bashkir Experimental Station of Apiculture
Title      : The Influence of Sotting Queens into the
             Upper Frames of the Hive upon the Swarming of
             Bees and the Collection of Honey

Orig Pub   : S. kh. Bashkirii, 1957, No 4, 32-35

Abstract   : In experiments at the Bashkirskaya Experimen-
             tal Station of Apiculture which were carried
             out on 20 bee colonies, it was established
             that as bees were kept in two frames under
             the conditions of collecting honey from lin-
             don trees, the setting of queens with young
             bees and a sealed-off brood into the upper

Card 1/2

73

147 Use of Complexens III ETPA used w
salt in the chromatographic separation of
and caesium

BUKIREV, A.I.; KOSTAREV, G.F.

Age and growth of bream in Kama Reservoir.  Vop. ikht. no.17:68-74
'61.                                                          (MIRA 14:5)

1. Permskiy gosudarstvennyy universitet.
                    (Kama Reservoir--Bream)

CHERNOUSOV, Ya.M., prof.; KOSTAREV, I.I., starshiy prepodavatel'

Structure of the Bulanash-Yelkina coal region. Izv. vys. ucheb. zav.; gor. zhur. 5 no.1:3-7 '62. (MIRA 15:4)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy geologii mestorozhdeniy goryuchikh poleznykh iskopayemykh Sverdlovskogo gornogo instituta. (Bulanash-Yelkina region--Coal geology)

KOSTAREV, I.I., inzh.

Regularities in the distribution of coal types in the Bulanash-
Yelkina coal region. Izv. vys. ucheb. zav.; gor. zhur. 6 no.3:
3-12 '63.                                              (MIRA 16:10)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva.
Rekomendovana kafedroy mestorozhdeniy goryuchikh iskopayemykh.

KOSTAREV, L. N.; KUVAYEVA, A. S.; Engs.

Electric Cables

Locating cable damage, Prom. energ. 10, No. 2, 1953.

9.  **Monthly List of Russian Accessions**, Library of Congress, ___May___ 1953. Unclassified.

KOSTAREV, L. S., Docent          (Cand. agric. Sci.)

"A Method of Operational Planning on Grain Collective Farms,"  Sub. 6 Feb 47,
Moscow Inst of Engineers for the Organization of Land Exploitation.

Dissertations presented for degrees in science and engineering in Moscow in 1947.

SO:  Sum.No.457, 18 Apr 55

KOSTAREV, N.N.; VOL'PE, L., red.

[Machine tools. Section "Gear-cutting machines;" written lectures] Metallorezhushchie stanki. Razdel: "Zuboreznye stanki;" pis'mennye lektsii. Leningrad, Severozapadnyi zaochnyi politekhn. in-t, 1964.  103 p.
(MIRA 18:7)

KOSTAREV, S.S., kapitan 3-go ranga.

How we pass on experience to young officers. Mor. sbor. 47
no.12:46-49 D '63.                                          (MIRA 18:12)

DEMIN, V.V., gornyy tekhnik; KOSTAREV, S.S., gornyy tekhnik

Payment to workers of integrated brigades. Gor. zhur. no.4:14-15
Ap '65.                                                    (MIRA 18:5)

1. Rudnik "Kholtoson", g. Zakamensk, Buryatskaya ASSR.

KOSTAREV, V., kand.tekhn.nauk

Clouds on the radar screen. IUn.tekh. 6 no.12:44-48 D '61.
(MIRA 14:12)
(Radar metereology)

KOSTAREV, V. N.

"Investigation of the Antifriction Properties of Metalloceramic Bearings." Cand Tech Sci, Leningrad Polytechnic Inst, Leningrad, 1954. (Stanki i Instrument, No 11, 1954)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

KOSTAREV, V.N.

Stand testing of PM-350 reducing gears.  Trudy LPI
no.219:130-139  '62.                              (MIRA 15:12)
                          (Gearing—Testing)

KOSTAREV, V.N.

Testing machine for sliding bearings. Trudy LPI no.219:153-161
'62.                                                    (MIRA 15:12)
                (Bearings (Machinery)--Testing)

ANOSOV, A.S.[deceased]; BARBASH, I.D.; KOMKOV, V.N.; KOSTAREV, V.N.;
KUGUSHEVA, V.M.; POLYAKOV, V.S., prof., red.

[Laboratory manual for a course on machine parts] Uchebnoe
posobie k laboratornym rabotam po kursu detalei mashin. 2. izd.
dop. i perer. [By A.S.Anosov i dr. Leningrad, Leningr. poli-
tekhn. in-t im. M.I.Kalinina, 1964. 55 p.        (MIRA 18:4)

KOSTAREV, V.                                                                    PA 190T97

USSR/Radio - DOSARM                              Jun 51
              Clubs

"The Center of Radio Amateur Work in Zlatoust,"
V. Kostarev

"Radio" No 6, p 11

Tells of the work of one Dement'yev, metal cutter
of the plant imeni Lenin, in organizing the radio
club in Zlatoust.  Club director is V. P. Petrov,
a former officer of the Soviet Army.  He believes
that amateurs of Zlatoust will shortly be able to
build their own small television center.

                                                        190T97

KOSTAREV, V.V.

Operation of twisting-machine travelers. Trudy LPI no.191:267-277
'57.
     (Textile machinery)          (MIRA 11:9)

KOSTAREV, V. V.

"The Aerostatic Resistance Thermometer," No 2, pp 83-86.
(Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

SO: U-3218, 3 Apr 1953

KOSTAREV, V.V.

KHAKHALIN, Viktor Stepanovich, kandidat tekhnicheskikh nauk; KOSTAREV, V.V.,
    otvetstvennyy redaktor; VLASOVA, Yu.V., redaktor; BRAYNINA, M.I.,
    tekhnicheskiy redaktor

[Radio engineering in aerology] Radiotekhnika v aerologii. Lenin-
grad, Gidrometeor.izd-vo, 1957. 263 p.              (MLRA 10:7)
    (Radiosondes)   (Radar meteorology)

AUTHORS:       Gorelik, A. G., Kostarev, V. V.,           50-59-5-2/20
               Chernikov, A. A.

TITLE:         Radar Measurement of Turbulence in Clouds
               (Radiolokatsionnoye izmereniye turbulentnykh dvizheniy
               v oblakakh)

PERIODICAL:    Meteorologiya i Gidrologiya, 1958, Nr 5, pp 12-19 (USSR)

ABSTRACT:      In recent years the possibility of a further perfection
               of the method and an extension of program of the meteo-
               rological observations by means of these methods of ope-
               ration already    introduced arose.. This development
               is possible in 3 directions complementing each other:
               1) Modernization of the usual apparatus according to
               the objects and the requirements of the meteorologists.
               2) Elaboration of a special aerological apparatus.
               3) Determination of data on reflection-sources of sig-
               nals of a meteorological origin. The above-mentioned
               methods in a certain sense are inertia-like. The increase
               in this property can considerably increase the domain of
               employment of these methods in aerology. At the same time
               it is beyond that the inertia-less method, i. e., the ob-
Card 1/4        servations of every impulse separately, can give valuable

Radar Measurement of Turbulence in Clouds            50-58-5-2/20

additional information on the physical properties of
meteorological phenomena. Observations according to
the last method are described. The measurement mentio-
ned in the title is explained by figure 1. At the output
of the receiver a sequence of impulses of the radio-echo
(Figure 1 v) forms, For the determination of the connec-
tions between the fluctuation amplitudes of the sequence
of reflected signals and the mean square velocity of the
chaotic motions of dispersing particles the authors em-
ploy a theory which was worked out during the investiga-
tion of the statistical nature of the ionosphere (Refe-
rences 1,2). A measuring method of the velocity of the
radio signal expressed in formulae (1) - (15) is consi-
dered inconvenient by the authors. The estimation of the
velocity with regard to orientation is expressed by the
formula:

$$v_s = \frac{n\lambda}{2\Delta T} \quad (17)$$

Card 2/4

The counting of the distinctly marked maxima during the
time of observation and the multiplication with a con-

Radar Measurement of Turbulence in Clouds                    50-58-5-2/20

stant coefficient $\frac{\lambda}{2\Delta T}$ is sufficient. A block scheme of the measuring device is shown by figure 2. Figure 3 gives recordings of the pulse-sequence. The pulses followed each other at 1/1500 seconds distance. The demands made on the apparatus mainly require that the frequency of the magnetron during the observation may change by a amount which is much smaller than $\frac{1}{0}$, that means:

$\Delta f \ll \frac{1}{\tau}$. By the investigation of the fluctuation of the

signal which is reflected by 2 weakly fluctuating local objects the frequency drop can be estimated. By the above-mentioned method the chaotic motions of the diffusers in different types of clouds and precipitation were investigated in summer and fall 1957. The distribution of the amplitudes of the received signal well agrees with the theoretical data. The not yet numerous results obtained from the work permit some conclusions on the amount

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Radar Measurement of Turbulence in Clouds               50-58-5-2/20

of chaotic agitations in the clouds. The values of $v_0$ for a vertical column of 150 m brought to an average, lie between 0,1 and 2,0 seconds. The highest values were obtained for thunder-clouds, the lowest ones for the stratus clouds. The method proved to be usable for this purpose.
There are 4 figures and 2 references, 2 of which are Soviet.

1. Clouds--Turbulence    2. Turbulence--Measurement
3. Radar--Performance    4. Meteorology

Card 4/4

SOV/58-59-8-18667

Translated from: Referativnyy Zhurnal Fizika, 1959, Nr 8, p 234 (USSR)

AUTHOR:          Kostarev, V.V.

TITLE:           An Experiment in Sounding the Troposphere by Means of Radar

PERIODICAL:      Tr. Tsentr. aerol. obser., 1958, Nr 20, pp 3-16

ABSTRACT:        The article describes equipment developed in 1956 for the purpose of
                 sounding the troposphere by means of radar. The equipment is based on
                 a modernized version of the "Kobal't" radiolocator with stepped-up
                 pulse power. As the reflector for the antenna unit a reinforced con-
                 crete bowl with a diameter of 20 m is used, which ensures the vertical
                 sounding of the troposphere. The high-frequency unit of the station
                 with the emitter is suspended by means of metallic cables at the
                 focal point of the reflector. The required form of reflector surface
                 was obtained with the aid of a special gage whose blades cut off the
                 cement mortar coating the concrete surface. The concrete surface was
                 metallized with zinc by means of the Schoope process. The photographic
                 results of observation were registered on a cathode-ray tube operating
Card 1/3         by radial scanning without after-glow, which ensured a photographic

SOV/58-59-8-18667

An Experiment in Sounding the Troposphere by Means of Radar

record of the rapid  fluctuations in brightness.  The installation of immobile radial
scanning vertically ensures a graphic space-time cross section of the troposphere. The
rate of movement of the film depends on the particular observational problem:  in order
to obtain a picture of clouds which approximates the visual image, the rate of movement
must be coordinated with the velocity of the wind.  Satisfactory results were obtained
at a velocity of 0.2 - 0.3 cm/min.  The division of the regions giving rise to the
signals of radioechoes of different intensity was effected by means of a stepped ARU
automatic regulating control in time.  A reflector with a large diameter gives an
advantage in detecting clouds of the upper stratum, but at the same time it impairs
the detection of clouds of the lower stratum.  For good observations on all levels of
the troposphere it is necessary to use several emitters with different irradiation
characteristics.  The results of the troposphere sounding of Spring 1956 are cited.
Precipitates of all intensities were detected during their liquid and solid phases,
as well as clouds in which inversion strata evolved under favorable conditions.  The
greatest registered height of the clouds was 12.5 km.  In connection with the un-
expectedly frequent detection of sharpened radioechoes, received during the complete
absence of clouds and precipitates, a theory has been advanced concerning the radar

Card 2/3

GORELIK, A.G.; KOSTAREV, V.V.

Modulation method of increasing the sensitivity of the receiver of a radar aerological observation station. Trudy TSAO no.20: 36-45 '58.                                                    (MIRA 12:1)

(Radar meteorology)

SOV/120-59-1-19/50

AUTHORS: Gorelik, A. G., Kostarev, V. V.

TITLE:   Modulation Method of Separating the Weak Pulse Signals
         (Modulyatsionnyy metod vydeleniya slabykh impul'snykh signalov)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 1, pp 77-82
         (USSR)

ABSTRACT:  The authors designed a special storage circuit which per-
         mits the improvement in the signal-to-noise ratio at the out-
         put of a microwave radar receiver.  The principle of operation
         of the storage device (Ref 4) is based on the comparison of
         the average values of two signals of equal duration.  The sig-
         nals are taken from the output of the receiver and are in the
         form of "segments".  The first segment is taken during the in-
         terval following the transmission of the sounding pulse and
         corresponds to a distance of 0-20 km.  The second segment
         corresponds to distances of 80 to 100 km.  The storage device
         (see the block diagram of Fig 1) is synchronized or triggered
         by the same pulse which triggers the time base of the radar
         equipment.  The pulse is applied to the first phantastron cir-
         cuit of the device (see the detailed circuit diagram in Fig 2).

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SOV/120-59-1-19/50

Modulation Method of Separating the Weak Pulse Signals

The delay of the phantastron can be varied continuously from
15-80µs. The phantastron pulses are differentiated and their
trailing edges are used to trigger the second phantastron which
has a fixed delay; the duration of this delay is equal to half
the repetition period of the radar pulses. The trailing edges
of the pulses from the second phantastron are used to trigger
the blocking oscillator which controls an electronic switch.
The signal from the output of the video-amplifier of the radar
equipment is applied to the electronic switch. However, the
signal is accepted by the integrator which follows the switch
only at the instants of the appearance of the control voltage
at the switch. The signal at the output of the switch is in-
tegrated (the averaging process) and is then applied to a
second switch which is controlled by the same pulses as the
first switch, except that these are delayed in time by 5µs.
The second switch is terminated by a load capacitance which
is charged to the full amplitude during the opening of the
switch; this voltage is preserved on the capacitor until the
succeeding operation of the switch, when it assumes a new
value which is equal to the integrated value of the succeed-
ing "segment". The voltage from the second switch is applied
Card 2/4  to a narrow band amplifier and then to a synchronous detector.

SOV/120-59-1-19/50

Modulation Method of Separating the Weak Pulse Signals

If a useful signal exists in the first segments, the output voltage of the second switch contains a component having the frequency of the transmitted pulses. If this component is absent, no useful signal is present. In order to secure an averaging time of the order of 1 sec, it is necessary to employ a very narrow band amplifier; this can be done by using a synchronous filter (employing a heterodyne). The circuit of Fig 2 has the averaging time, ranging from 1.2 to 2.5 sec. In practical applications it was found that when the averaging time is 2.5 sec, the gain in the signal-to-noise ratio in comparison with that of a standard radar station was 17 db. The improvement secured by using the storage device is illustrated in Figs 4, where the lower photograph shows the normal signal,

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SOV/120-59-1-19/50

Modulation Method of Separating the Weak Pulse Signals

while the upper one illustrates the output produced by the storage equipment. The paper contains 5 references, 4 of which are Soviet and 1 is English.

ASSOCIATION: Tsentral'naya aerologicheskaya observatoriya (Central Aerological Observatory)

SUBMITTED: February 7, 1958.

Card 4/4

3(6), 9(9)

AUTHORS:      Gorelik, A. G., Kostarev, V. V.          SOV/20-125-1-14/67

TITLE:        The Radio Echo of Some Invisible Objects of Troposphere
              (Radioekho nekotorykh nevidimykh ob"yektov troposfery)

PERIODICAL:   Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 59-61
              (USSR)

ABSTRACT:     The dielectric inhomogeneities of the atmosphere caused by
              the gradients of meteorological elements may call forth radar
              signals.  However, neither the nature nor the structure of
              the sources of such a radio echo are yet known.  Some data
              might be obtained by investigating the characteristics of the
              signals and by comparing them with meteorological conditions.
              For this purpose, a regular radar sounding of the troposphere
              was carried out on the wavelength 3.2 cm at the Tsentral'naya
              aerologicheskaya observatoriya (Central Aerological Observatory)
              from 1956 to 1958.  In the course of observations several times
              punctiform sources of a radio echo were detected at altitudes
              up to 7 km.  At the same time, no visible objects were detected
              in the atmosphere from the ground and by means of an aerostat.
              Sounding results were recorded by two different methods.  The
Card 1/4      vertical distribution of the reflecting objects was recorded

by two different methods.  The vertical distribution of the
reflecting objects was recorded according to the inertia
method, whereas the succession of the individual pulses of
radio echo was recorded in order to determine the peculiarities
of the reflected signals.  The essential characteristic feature
of radio echo is the degree of reflection of the signal, which
is determined from the depth and from the character of the
envelope of the sequence of reflected signals.  If an
individual signal A is originated by superimposition of a
regularly reflected and a disordered signal, it may be
represented in the form

$$A = A_o \cos \omega_o t + \sum_1^N a_s \cos(\omega_s t - \varphi_s).$$

$A_o$ denotes the amplitude of the regular signal, $\omega_o$ the frequency
of the sounding pulse, $\sum_1^N a_s \cos(\omega_s t - \varphi_s)$ the absolute value
of the signal of the inhomogeneities moving in a disordered
manner.  $A_o^2 / \sum_1^N a_s^2 = \beta^2$ is the ratio of the mirror component
and of the disordered component of the signal.  The degree of

Card 2/4          signal reflection and the root mean square velocity of the

and heating of the ground.  2) There is an annual and a
daily periodicity.  The signals are observed in the warm season,
and the number of signals attains a maximum between 13 - 15
hours.  There is usually a layer of inversion over the region
where radio echo sources frequently occur.  4)  The life

period of the signals of an individual source decreases with
rising wind velocity.  The signal intensity also weakly depends
on the duration of the sounding pulse of the transmitter.
The variety of the properties of the signal is probably caused
by the variety of its internal structure.  Radar sounding allows

Card 3/4          the evaluation of the gradient of the dielectric constant, the

determination of the spatial distribution of inhomogeneities
in the troposphere, their evolution with progressing time,
their concentration, etc.  There are 2 figures and 5 references,
2 of which are Soviet.

ASSOCIATION:  Tsentral'naya aerologicheskaya observatoriya (Central
Aerological Laboratory)

PRESENTED:  November 24, 1958, by M. A. Leontovich, Academician

SUBMITTED:  October 28, 1958

SHUPYATSKIY, Arkadiy Borisovich; KOSTAREV, V.V., red.; SOROKINA, M.I.,
    red.; ZETSOVA, T.Ye., tekhn.red.

[Radar measurement of the intensity and some other characteristics
of precipitation] Radiolokatsionnoe izmerenie intensivnosti i
nekotorykh drugikh kharakteristik osadkov.  Pod red. V.V.Kostareva.
Moskva, Gidrometeor.izd-vo, 1960.  118 p.
                                                    (MIRA 14:1)

    (Precipitation (Meteorology))   (Radar meteorology)

PHASE I BOOK EXPLOITATION     SOV/5852

Borovikov, Aleksandr Moiseyevich, Ivan Ivanovich Gayvoronskiy, Yelizaveta
   Germanovna Zak, Vadim Vladimirovich Kostarev, Il' ya Pavlovich Mazin,
   Vladislav Yevgen' yevich Minervin, Aleksandr Khristoforovich Khrgian, and
   Solomon Moiseyevich Shmeter

Fizika oblakov (Cloud Physics) Leningrad, Gidrometeoizdat, 1961.  458 p.
   5000 copies printed.

Ed. (Title page): A. Kh. Khrgian; Ed. : V. S. Protopopov; Tech. Ed. :
   M. I. Braynina and O. G. Vladimirov.

PURPOSE:  This book is intended for meteorologists and for specialists in fore-
   casting service and aviation.

COVERAGE:  The book describes modern methods of studying the development,
   structure and origin of clouds.  Special attention has been given to the forma-

Card 1/10
   2

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S/789/61/000/036/002/013
E032/E314

3.5800

AUTHORS:     Borovikov, A.M., Kostarev, V.V., Mazin, I.P. and
Chernikov, A.A.

TITLE:       Relation between the magnitude of the radar signal
reflected from a cloud and the cloud parameters

SOURCE:      Tsentral'naya aerologicheskaya observatoriya. Trudy.
no. 36. Moscow, 1961. Voprosy fiziki radiolokatsii
oblakov, 14 - 30

TEXT:       Atlas (Journ. of Met. v.11, no.4, 1954) and Donaldson
(Journ. of Met., v.12, no. 3, 1955) have discussed the possibility
of the measurement of the liquid-water content of clouds by radar
methods and have concluded that this was possible. In view of the
considerable scientific and practical importance of the problem,
the authors undertook a theoretical and experimental study of this
subject and the results are now reported. Theoretical analysis
showed that the strength of the reflected radar signal provided
information about the quantity

$$Z = \int_0^\infty n(r)\, r^6\, dr \qquad (4) \ .$$

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Relation between ....

Since the liquid-water content is given by

$$w = \frac{4}{3}\pi \int_0^\infty n(r)\, r^3\, dr \qquad (5) \; ,$$

it follows that the relation between $Z$ and $w$ depends on the form of the particle-size distribution. Detailed examination of known drop-size distributions shows that $w$ can be determined provided there are not too many large particles. The experimental part was carried out from the aerological radar station developed and built at TsAO and operating at $\lambda = 3.2$ cm. The aim was to obtain radar data which could be compared directly with aeroplane observations. A description of the apparatus is said to be available elsewhere [Abstracter's note: reference not given]. A detailed numerical table is reproduced showing a comparison between radar observations and observations carried out from an aeroplane with the aid of the drop-size meter developed by Nevzorov at TsAO (c.f.*pp. 3-13 of this issue). General conclusions: strong signals ($Z > 10^{-15}$ cm$^3$) are due to large particles

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Relation between ....

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E032/E314

so that practically all the characteristics obtained with the radar
equipment refer only to the large-particle "cloud". Since the
presence of even a small number of such particles in clouds has an
appreciable effect on the reflected signal, and since the strength
of the signal is very sensitive to the size spectrum, it is consid-
ered that the relation between Z and w cannot, in practice, be
separated from the general background due to other factors, i.e. w
cannot be determined from Z alone. Thus, the "optimistic
conclusions" of Atlas and Donaldson are considered unfounded. It is
noted, however, that this does not mean that radar methods cannot be
used in cloud studies. On the contrary, because the radar signal
provides information about the presence and behaviour of large
particles in clouds, this opens up new possibilities in the experi-
mental study of clouds and precipitation.
There are 2 figures and 4 tables.

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3, 5800

S/058/62/000/006/117/136
39137
AC62/A101

AUTHOR:     Kostarev, V. V.

TITLE:      Radar measuring of cloud water abundance

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 32, abstract 6Zh214
            ("Tr. Tsentr. aerol. observ.", 1961, no. 36, 31 - 36)

TEXT:     The possibilities of measuring cloud water abundance by radar
methods are discussed. It is shown that the process based on radar reflection
yields almost always erroneous results in view of the presence of "gross" par-
ticles in almost all clouds. The process based on measuring water abundance by
the attenuation is practically also inconsistent since the spectrum variations
of the cloud particle dimensions act considerably more on the signal amplitude
than on the attenuation. The latter statement also applies to measuring water
abundance by the difference of attenuation on different wavelengths. A method
is proposed for distant determining water abundance by the magnitude of the at-
tenuation of a signal reflected from a standard target (a sphere). It is shown
that the proposed method of determining water abundance has a number of advan-

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Radar measuring of cloud water abundance

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A062/A101

tages (no need of high potential radar signals, no need of absolute measuring of the power of the radio echo, etc.).

Yu. Mel'nikov

[Abstracter's note:  Complete translation]

Card 2/2

BOROVIKOV, A.M.; KOSTAREV, V.V.; MAZIN, I.P.

Use of radar for studying the structure of clouds.   Dokl. AN SSSR
140 no.3:575-578  S '61.                                     .(MIRA 14:9)

1. TSentral'naya aerologicheskaya observatoriya.  Predstavleno
akademikom Ye.K.Fedorovym. (Radar Meteorology)

GORELIK, A.G.; KOSTAREV, V.V.; CHERNIKOV, A.A.

New possibilities for wind measurement by radar.  Meteor. i
gidrol.  no.7:34-39  Jl  '62.                                  (MIRA 15:6)
                          (Radar meteorology)  (Winds)

*Kostarev, ₮₦.U.U.*

AID Nr. 981-3    3 June

# CONFERENCE AT CENTRAL AEROLOGICAL OBSERVATORY (USSR)

Meteorologiya i gidrologiya, no. 3, 1963, 60.    S/050/63/000/004/002/002

The following are among the reports presented at a recent session of the Scientific Council of the Central Aerological Observatory: 1) N. Z. Pinus -- an experimental investigation of the wind field at altitudes of 7 to 11 km, certain peculiarities of the mesostructure of the wind field, and the statistical characteristics of horizontal and veritical wind fluctuations in the jet stream zone in different regions of the European USSR and Siberia; 2) S. M. Shmeter -- the process of cumulonimbus cloud development and a proposed model of the structure of the fields of meteorological elements near the upper third of such clouds at different stages of development; 3) V. D. Reshetov -- the use of hydrodynamic equations for determining the interdependence of ageostrophic, nonstatic, and nonstationary atmospheric motions and a more

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CONFERENCE AT CENTRAL AEROLOGICAL [Cont'd]    S/050/63/000/004/002/002

accurate form proposed for writing such equations; 4) I. F. Kvaratskheliya -- conditions for the formation of sharp changes of vertical wind shear in the upper half of the troposphere over the Transcaucasus; 5) A. I. Ivanovskiy and A. I. Repnev -- the hydrodynamics of the upper atmosphere, taking into account the chemical reactions occurring under solar influence; 6) V. V. Kostarev, A. M. Borovikov, and A. B. Shupyatskiy -- certain radar criteria for identifying the hail content of clouds and criteria for evaluating the effect of cloud modification; and 7) A. G. Gorelik -- certain results of radar investigations of the wind field at altitudes of 50 to 700 m.    [ET]

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S/2922/63/009/000/0145/0153

ACCESSION NR: AT4033564

AUTHOR: Gorelik, A. G.; Kostarev, V. V.; Potemkin, I. G.; Chernikov, A. A.

TITLE: Increasing the sensitivity of the receiver of an aerological radar set

SOURCE: Vsesoyuznoye nauchnoye meteorologicheskoye soveshchaniye. 1st, Leningrad, 1961. Pribory* i metody* nablyudeniy (Instruments and methods of observation); trudy* soveshchaniya, v. 9, Leningrad, Gidrometeoizdat, 1963, 145-153

TOPIC TAGS: meteorology, aerology, meteorological instrument, meteorological radar, signal-to-noise ratio, radar sensitivity

ABSTRACT: The use of ordinary radar apparatus in aerology for observation of many meteorological objects is impossible because of inadequate sensitivity. The signal reflected from the object often is so weak that it is lost in the instrument noise. The authors therefore have devised a signal accumulator which improves the signal-to-noise ratio at the output of the receiver of an ordinary centimeter-range radar set. The signal accumulator makes it possible to detect a weak radar echo, determine the coordinates of its source and obtain data on the strength of the reflected signal. A simplified block diagram of the detection of a weak signal by use of this device is shown in Fig. 1 of the Enclosure. The amplitude char-acteristics and gain of the signal accumulator are described. A very detailed

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ACCESSION NR: AT4033564

circuit diagram accompanies a text which fully describes the components and opera-
tion of the device. Orig. art. has: 18 formulas and 4 figures.

ASSOCIATION: Tsentral'naya aerologicheskaya observatoriya (Central Aerological
Observatory)

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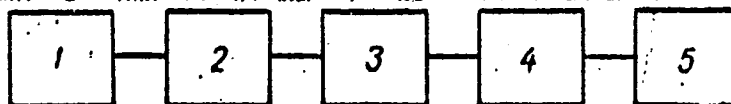SUB CODE: ES, EC

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Fig. 1.  Simplified block diagram for the detection of a faint signal.
1 - radar receiver; 2 - selector stages of signal accumulation device;
3 - integrator; 4 - shaping device; 5 - averaging device, employing quartz
                            filter.

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L 14714-65   EWT(1)/FCC  GW

ACCESSION NR: AT5008979                           UR/2739/64/000/057/0019/0023

AUTHOR:  Gorelik, A. G.; Kostarev, V. V.; Chernikov, A. A.

TITLE:  The coordinate-Doppler method of wind observations

SOURCE:  Tsentral'naya aerologicheskaya observatoriya. Trudy, no. 57, 1964.
Radiolokatsionnyye metody aerologicheskikh nablyudeniy (Radar methods of aerological
observation), 19-23

TOPIC TAGS:  meteorological measurement, wind velocity, atmospheric turbulence,
rawin sonde, Doppler effect, weather balloon

ABSTRACT:  Observation of pilot balloons can supply information not only on the
average wind conditions but also information about atmospheric turbulence. How-
ever, the widely used coordinate method for wind observations has several essential
shortcomings, the most important of which is the impossibility of continuous
velocity registration. However, by using the Doppler effect, a method is provided
by which accurate continuous registration of the projection of the probe's
velocity in the direction of the radar beam can be achieved. Tests have shown
that one can achieve a very accurate continuous registration of the projection
of the probe's velocity in the direction of the radar beam by using the Doppler

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ACCESSION NR: AT5008979

effect. Nevertheless, this reading alone (using only one radar station) cannot give the direction in which the pilot balloon is moving. Combining the two methods, the authors were able to devise a new atmosphere-probing method which not only provides average wind velocities but also turbulence parameters at various levels. Following a general theoretical derivation of the underlying principles, the authors estimate the accuracy of the method and describe the block-diagram of a device suitable for carrying out the necessary measurement. Orig. art. has 15 formulas and 1 figure.

ASSOCIATION:  Tsentral'naya aerologicheskaya observatoriya (Central Aerological Observatory)

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